APRIL/MAY 2023

CSCS33 — DIGITAL LOGIC DESIGN AND COMPUTER ORGANIZATION

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Compute $(1101.001)_2 = (\_\_\_\_\_\_\_\_)_7$

2. How do you perform binary addition?

3. Write the truth table for a full adder.

4. Draw the circuit of BCD adder.

5. Mention the uses of shift register.

6. What is called encoder?

7. What is the role of program counter?

8. What is called bus?

9. Define Priority interrupt.

10. Define virtual memory.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Compute binary, octal and hexadecimal of $(365.25)_{10}$

Or

(b) What are the uses and importance of octal number system?

12. (a) Design the Complete circuitry of a full adder.

Or

(b) Design a fill adder circuit by using two half adder.

13. (a) What are the steps for the design of asynchronous sequential circuit?

Or

(b) Design and define the operation of D flip flop.

14. (a) Explain the function of CPU with block diagram.

Or

(b) Explain general register based CPU organization.

15. (a) Explain the concept of direct mapping.

Or

(b) What is called DMA? Explain the operation with neat block diagram.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explore the advantages and disadvantages of universal gates.

17. Evaluate the following Boolean expression to minterms and maxterms A+BC'+ABD'+ABCD. Draw the circuit for this expression with minimal number of gates.

18. Describe the input and output action of JK flip flops.

19. Explain the function of CPU with block diagram.

20. Explain ROM and RAM chips with neat block diagram.
